Student Response to Written Corrective Feedback

Arlan A. Parreño

arlanparreno@gmail.com

Assumption University

Abstract

Student response, in terms of attention/awareness, actions, and attitudes, to written corrective feedback (WCF) is believed to influence the effectiveness of such feedback. To determine how Thai university students respond to WCF and whether there were differences in their responses to three common types of WCF, a survey was conducted. Three sections of a foundation academic English course were involved, each receiving consistent focused WCF – one section with direct corrective feedback, another with indirect corrective feedback, and the third with coded corrective feedback – in their paragraph compositions throughout one semester. A questionnaire with items on attention/awareness, actions, and attitudes regarding the WCF they received was administered at the end of the semester. Findings indicate that students paid attention to/were aware of the WCF and that they acted in similar ways upon receiving their writings. They also had positive attitudes towards WCF. However, this study revealed that coded corrective feedback entailed a significantly higher level of attention/awareness and significantly more positive attitudes than the direct and indirect types. Although the findings may suggest that using coded corrective feedback is a better approach than direct correction or indirect correction, its efficacy on second language learning/acquisition needs further investigation.

Keywords: corrective feedback, error correction, grammar, student response, L2 learning

Introduction

Language teachers are bound by expectations and perceived responsibility of giving feedback. Feedback is primarily given to indicate whether students' answers, opinions or any outputs are correct or appropriate, or on what and how students should improve. That is why several approaches have been employed in providing both oral and written feedback in language classrooms.

For writing instructors, especially those in second language (L2) teaching, giving written feedback can be a daunting task because giving such feedback is very time consuming and challenging (Ferris, 2007). Teachers spend significant amounts of time and effort in giving written feedback. Leki (1990) pointed out that writing teachers are compelled to provide such feedback because of the need to assess students' written outputs as well as to support and explain those assessments.

Leki (1990) noted that one of the most common written feedback given by instructors is on language use, known as written corrective feedback (WCF), error correction or grammar correction. She claimed that writing instructors focus not only on ideas but also on how ideas are presented or structured, i.e. language forms, because the label "writing teacher" entails the expected responsibility of teaching how to write in a particular language.

Literature Review

Notions about written corrective feedback

The findings of Schulz (2001), Montgomery and Baker (2007) and Lee (2009) confirmed language teachers' beliefs and practices supporting corrective feedback in terms of language use. Students as well have a strong belief about the importance of error corrections in learning a language and, understandably, have great expectations as well on receiving such feedback (Hedgecock & Lefkowitz, 1996; Leki, 1990; Nunan, 1998; Schulz 2001; Ur, 1998). Due to these beliefs and expectations, giving grammar corrections has become a pervasive practice among language teachers (Ferris, 2010).

However, despite the mostly positive perception of the value of corrective feedback, language academics do not agree on the effectiveness of different kinds of corrective feedback and even its usefulness in general (Ellis, 1995, 2009; Hyland and Hyland, 2006; Ur, 1998). Hendrickson's questions on whether language errors should be corrected, what kinds of error should be dealt with, and how to correct these errors back in 1978 are still asked today. Research results have not been helpful in settling these issues (Macaro, 2005; Guenette, 2007; Storch, 2010).

Since the 80's up to mid-2000, language researchers and experts have offered conflicting findings and notions about the benefits of corrective feedback. For example, Lalande (1982), Schmidt and Frota (1986), Fathman and Whaley (1990), Kubota (2001), Matsumura et al (2002), Ferris (2006), and Ellis, Loewen, and Erlam (2006) all favored the use of corrective feedback. On the other hand, Semke (1984), Brock et al (1986), Robb, Ross and Shortreed (1986), Krashen (1987), Leki (1990), Kepner (1991) and Truscott (1996 and 2007) questioned its usefulness.

Common types of written corrective feedback

Obviously, the conflicting research findings and opinions have not been helpful in clarifying the role of corrective feedback in language learning/acquisition, especially in L2. Hence, English teachers are somewhat left to depend on their personal beliefs as to how they should provide feedback on their students' writings, leading to teachers using different types of corrective feedback. Ellis (2009) noted that there are three most common types of WCF used by language teachers, namely, direct corrective feedback (DCF), indirect corrective feedback (ICF), and metalinguistic corrective feedback, of which coded corrective feedback (CCF) is the most common approach. In the DCF type, teachers explicitly supply the correction by drawing a line through an error and writing the correct word or words directly above it, by crossing out unnecessary word or words that make a structure incorrect, or by inserting a letter, word or words to make a structure correct. Teachers using ICF simply underline or circle errors in students' compositions without giving the correct word or words and without explaining the errors. CCF refers to the approach in which teachers underline or circle errors and identify the types of errors by using codes such as VT for verb tense and WF for word form. However, the question as to which type is the most effective is also far from settled.

The recent investigations of Ellis et al (2008), Bitchener and Knoch (2009), Bitchener, East, and Cartner (2010), and Sheen (2010) have provided encouraging results for those who support WCF. Their studies suggest that if corrective feedback is focused on selected, i.e. not all, kinds of errors, it works not only in the short term but in the long term as

well. Their findings, however, have not stopped calls for investigations into the efficacy of various WCF approaches, especially because their studies employed only direct correction. Bitchener and Knoch (2009) and Ferris (2010) conceded that one of the issues that needed to be settled with regard to giving feedback concerning grammatical performance of students was the type of feedback that should be provided. It may be possible that other common corrective feedback methods may improve accuracy. Indirect correction, preferred by Fathman and Whaley (1990) and Lee (1997), and use of correction codes, claimed to be effective by Lalande (1982) and Kubota (2001), may produce positive results as well.

Student response to written corrective feedback

How students respond to teachers' WCF is considered as an important factor in its efficacy. Leki (1990), Guenette (2007) and Ellis (2009, 2010) agreed that students' affective and behavioral responses to teacher feedback are critical to the effectiveness of such feedback.

According to Leki (1990), one most likely reason for the failure of WCF could be the lack of positive student response to the feedback. Sachs and Polio (2007) claimed that cognitive response in the form of attention to WCF could be related to improvement in language accuracy. As Ellis (2009) put it, "corrections can only work if writers notice and process them" (p. 105). This belief is in accordance with Schmidt and Frota's (1986) "Notice-the-gap Principle" which posits that when learners notice the "gap" or difference between their outputs and the target forms they can make adjustments in their hypotheses about the target forms and, as a result, they learn those forms.

However, not all language experts agree on the positive relationship between WCF, students' response to such feedback and the feedback's impact on language learning. Truscott's analysis (2007) of several WCF studies, he noted that in one particular experiment, students who paid more attention to corrective feedback had poorer accuracy performance. He stated that such finding suggests that "students who more carefully attended to corrections harmed their learning by doing so" (p. 261). Moreover, Krashen (1987), Young (1999) and Ur (1998) contend that corrections could embarrass and demotivate students, especially if all kinds of errors are corrected. Despite noting the positive perception of the learners in her case studies, Hyland (2003) believed that corrective feedback may negatively impact learners' self-motivation and self-confidence as writers.

Aspects of student response to written corrective feedback

To address concerns about student response, Ellis (2010) drew a framework for corrective feedback studies and used the term "engagement" which should be considered in determining the efficacy of corrective feedback. He named three aspects of learner engagement to corrective feedback:1) cognitive aspect, or the attention paid to the feedback; 2) behavioral aspect, which refers to how learners deal with or act on the feedback in terms of uptake or learners' immediate response; and, 3) affective aspect, or the attitudinal response of learners to the feedback they receive. These three aspects have an interplay that is vital in second language learning and acquisition (Gass and Selinker, 1994; Ellis, 1997; Krashen, 1987; Dornyei, 2001; Woolfolk, 1998).

Attention/Awareness

Attention is a cognitive function of focusing on stimuli (Woolfolk, 1998), and, as noted by Gass, Svetics and Lemelin (2003), is a significant factor in L2 learning and acquisition. Awareness on the other hand is a "subjective, contentful feel of experience that can be reported to others, to varying extents" (Robinson et al, 2012, p. 248). Schmidt and Frota (1986), Schmidt (1990) and Leow (1997) claimed that awareness plays a vital role in learning and acquiring a foreign language. Schmidt and Frota (1986) and Schmidt (1990) believed that both attention and awareness are necessary in language learning as they are what constitute "noticing" which is the vital condition in converting language inputs, i.e. specific linguistic forms, to intake for learning. In Gass and Selinker's (1994) apperception concept, which is similar to noticing, attention is a significant factor that influences the processing and understanding of language inputs. They argued that attention is important because it "…allows a learner to notice a mismatch between what he or she knows about the second language and what is produced by speakers of the second language. If one is going to make modifications in one's grammar, one must first recognize that changes need to be made. Thus, readjustment of one's grammar is triggered by the perceptibility of a mismatch" (p. 299). Leow's (1997) study about awareness of targeted linguistic forms indicated that awareness influences foreign language learning and performance. He used three criteria to define awareness: "a show of some behavioral or cognitive change, a report of being aware of the experience, and some form of metalinguistic description of underlying rule" (p. 474). His findings revealed that different levels of awareness result in differences in the processing of language input. He noted that meta-awareness is related to high cognitive processes of hypothesis testing and morphological rule-formation, but without that awareness such processing seems not to occur. Thus, the more aware the learners of the targeted forms are the more they are able to recognize and accurately write those noticed forms.

Attitudes

Attitude is "a disposition to respond favourably or unfavourably towards some person, thing, event, idea, place or situation" (Wortman & Loftus 1992 cited in McInerney & McInerney 1998, p. 256). In other words, it is what individuals think or how they feel about something and is reflected in their actions such as liking or disliking it.

Attitude is also an important factor in L2 learning and acquisition. Williams and Burden (1997) and Dornyei (2001) contended that attitudes, e.g. towards language learning in general and learning situations (such as methods and practices), are vital in L2 learning as attitudes are crucial components of motivation, which explains why people do something and how hard and how long they do them. People tend to do something positive and keep on doing it if they have a positive attitude to it. Krashen (1987) argued that learners have affective filters that allow them to learn or acquire a target language. For example, L2 learners are amenable to learning a language or certain language structures when they have positive attitudes towards them and towards the learning situation. In Gass and Selinker's (1994) integrated view of L2 acquisition, they believed that attitude is a significant affective factor that influences apperception, i.e. what language input is noticed and primed for learning. They also connected attitudes to another apperception factor – attention – which they claimed is influenced by learners' attitudes. If learners like particular teaching methods or practices, they are more likely to pay attention to what is being taught.

Actions

Behavioral response to corrective feedback is also a crucial factor that should be considered in studying the efficacy of such feedback. Language learners' choice of particular actions and their effort on and persistence with such actions are significant in the L2 learning process and are influenced by motivation (Dornyei, 2001). Dornyei views L2 learner actions based on several schools of thoughts on motivation. Behaviorists view actions as influenced by stimuli and conditioning. For humanists, they are influenced by needs. For cognitivists, actions are products of cognitive processes such as attitudes, thoughts, beliefs, and interpretation of events. While for various motivation theorists, actions may be dictated by goals, past successes or failures, confidence, or likes/dislikes. What language learners do, why they do them, and how hard and how long they do them are all important in explaining language learners' success, and for Dornyei, all these are related to motivation.

Studies on student responses to written corrective feedback

Attention/awareness and actions

In Chaudron's (1995) review of literature, he noted that oftentimes students did not pay attention to corrective feedback. Leki's (1990) observation also depicted a not-so-encouraging picture of student response to teacher feedback, such as students not reading the feedback, not understanding it, not knowing how to implement it, and even being "hostile" to it. Moreover, Cohen and Calvanti's case study (1990) revealed that students who reported paying attention to their teachers' written corrective feedback had no systematic way of dealing with such feedback. What they did was just to make a mental note of the feedback.

On the other hand, Wen (2009) noted the following actions of Thai university students when they received their journals with direct corrections from their teachers: reading and correcting their mistakes, asking their teacher for assistance, checking a reference, remembering errors, and asking their classmates for help.

Attitudes

Although students' cognitive and behavioral response to written corrective feedback may not be all positive, case studies and surveys have revealed that, in general, student perception of WCF has been favorable. The case studies of Cohen and Calvanti (1990), Hyland (2003), Shin (2008), Wen (2009) and the survey of Schulz (2001) all showed that most students had positive attitudes towards the WCF they had received. Wen (2009) found that many students valued feedback on language accuracy more than feedback on content and organization. The experimental studies of Lalande (1982) and Kubota (2001) also noted favorable attitudes to grammar corrections.

Hyland's case study (2003) revealed that students knew that receiving grammar corrections would not immediately improve their grammar, but they believed that getting such feedback continuously would be useful in the long run. They added that absence of corrective feedback would be counter-productive.

Cohen and Calvanti (1990) explained that the positive attitude towards corrective feedback could be due to students' learning experiences, i.e. focus on grammar. Schulz (2001) echoed the same reason, adding that the experience is not only in terms of how students are taught but also how they are tested. She also stated that this could be a result of

some stories being passed from one student generation to another about how useful grammar and grammar corrective feedback are.

It is not surprising that students expect to receive feedback on their language outputs as they have the view that the teacher is a knowledgeable person who has the responsibility of explaining and giving feedback (Schulz, 2001). For Ellis (2000), students' inclination towards language forms/structures and, thus, towards WCF could be traced to the main purpose of a language classroom – language learning. Since they are attending language classes, students expect that they should be learning the features of the language they are studying, how they work and how to use them.

Taking into consideration student expectations in a language classroom, such as the expectation to receive grammatical corrective feedback, is believed to be vital. As Schulz (2001) pointed out "Language learning could thus be hindered if students have specific beliefs regarding the role of grammar and corrective feedback and if their expectations are not met." (p. 256).

Student Response to Different Types of Written Corrective Feedback

The kind of WCF may also play a crucial role in the way students respond to the feedback and in the effectiveness of such feedback. Williams and Burden (1997) posited that the nature and amount of feedback is a factor in L2 learning motivation.

Shin (2008) found that students' attitudes towards WCF differ based on the approach. She noted that students preferred direct corrections over use of codes and indirect approach, such as underlining, as they needed the right words or right way to express something because they did not have enough language knowledge and skills. They also admitted that most of the time, they did not understand or did not know how to correct their mistakes that were underlined or coded.

Storch and Wigglesworth (2010) looked into the relationship of the use of codes and reformulation as WCF to language-related episodes, and levels of engagement, uptake, and retention. Their study revealed that more language-related episodes and higher levels of engagement were observed among students who received coded feedback than among those who received reformulations. They also noted that as the level of student engagement with the feedback increased, more uptake, retention, and comprehension of feedback were achieved. They further observed that lower retention was related to resistance which was a result of negative attitudes towards feedback. They concluded that beliefs and attitudes towards written corrective feedback "influence not only the type of strategies learners adopt in dealing with the feedback but also their willingness to accept the feedback and their likelihood of retaining it" (p. 238).

Research Objective and Research Questions

The review of related literature indicates that attention/awareness, attitudes, and actions are believed to have important roles in L2 learning and acquisition. Students' responses to WCF in terms of these factors are thus vital in explaining the effectiveness of WCF approach in the L2 teaching-learning process. However, studies on students' responses to WCF and different WCF types involving these three factors are limited. Thus, this investigation was conducted to explore students' responses, in terms of attention/awareness, action and attitude, to the three different types of written corrective feedback.

In particular, this investigation tried to answer the following questions.

1) How do students respond, in terms of attention/awareness, action and attitude, to WCF?
2) Are there significant differences in students' responses to the three types of WCF, namely direct, indirect, and coded corrective feedback?

The findings of this study can provide insights to help us understand the interplay between these responses and the influence of such feedback on students' L2 learning process. Furthermore, the findings can contribute to the existing body of knowledge with regard to the role of corrective feedback in L2 learning. Such knowledge is useful in teacher education, especially in English language teaching, as well as in the field of language research.

Methodology

The study, involving 51 first year Thai students in three sections of English I, was done at an English-medium university in Thailand in semester 1/2011. The three sections, which were handled by the same teacher, were randomly assigned to three groups (based on the three common types of WCF): ICF = 18 students, DCF = 13 students, and CCF = 20 students.

ICF was done by circling/underlining incorrect words; DCF was done by drawing a line through incorrect words and writing the correct forms above; and CCF was done by underlining the errors and writing codes above them to indicate the kind of errors (i.e. VF for verb form, VT for verb tense, SVA for subject-verb agreement, and WF for word form; symbols with their meanings and examples were contained in a correction guide given to CCF students). WCF was focused on four grammatical areas (verb form, verb tense, subject-verb agreement, and word form) as these areas were found to be very common in Thai students' compositions (Lush, 2002; Thep-Ackrapong, 2005; Sattayatham & Honsa, 2007; Bennui, 2008; Jenwitheesuk, 2009). Consistent corrective feedback based on students' group was given on their four practice paragraph writings and on the paragraph writing part of their two quizzes and of their mid-term exam. Specific and general written feedback on content and organization was also given. Students had to rewrite their practice compositions based on the feedback.

Instrument

A questionnaire, based on the work of Chaudron (1995), Leki (1990), Cohen and Calvanti (1990), Wen (2009), Lalande (1982), Frantzen (1995), Hedgecock and Lefkowitz (1996), Schulz (2001), Kubota (2001), Hyland (2003), and Shin (2008), was used to gather data about students' responses to written corrective feedback. The questionnaire, written in English with Thai translation after each question/item, was administered at the end of the semester.

The first part of the questionnaire asked about students' profiles. Part II of the questionnaire consists of five questions. Questions 1-3 relate to their awareness of the kind of written feedback they had received on their writings. The students were asked to choose which kinds of written corrective feedback they had received and which grammar areas were corrected/commented on. Every correct answer was given one point and their total scores were rated from 0-8 (from being unaware to fully aware of the kind of written corrective feedback they had received). Question 4 contains six items about what students did when they received their practice writings with written corrective feedback. They were asked to

rate how often they did each of the six actions, with five choices: never, rarely, sometimes, usually, and always. Question 5 consists of 19 items about attitudes to the grammar corrections students received. Students were asked to rate their disagreement or agreement (strongly disagree, disagree, undecided, agree, strongly agree) to each item.

The questionnaire's content validity was evaluated and approved by nine faculty members of Assumption University who had extensive experience in research, psychology and language education. A pilot study in semester 2/2010 proved the comprehensibility and reliability of the questionnaire. Reliability tests, i.e. internal consistency, revealed a high reliability with *Cronbach's alpha* = 0.80 in the pilot study and *Cronbach's alpha* = 0.88 in the proper study.

Data analysis

Using SPSS, means, modes, medians, standard deviations and percentages were calculated. To determine if there were significant differences in the responses to individual questions/items the nonparametric test Kruskal-Wallis was used, and a follow-up Mann-Whitney U test was used to isolate the significant differences between the groups (Field, 2000; Ho, 2006). These nonparametric tests were used since data exploration revealed that the data for the three individual attention/awareness items did not meet the assumption of normality. They were also used for the action and attitude items as the responses or data were ordinal in nature.

Exploration of data showed that the data on total scores on attention/awareness (ratio data) and average attitudes (interval data) were normally distributed. Thus, to determine whether there were significant differences between the groups in these two data sets, one-way analysis of variance (ANOVA) was performed. Post-hoc comparison tests, i.e. Hochberg' GT2 for data that did not violate the homogeneity of variance and Games-Howell for data that did not meet the assumption of homogeneity of variance, were conducted to locate the differences.

Results and Discussion

Attention to/awareness of WCF

Students' answers to each question regarding their awareness of or attention to the written corrective feedback they received were scored whether correct or incorrect. A correct response received 1 mark and an incorrect response received no mark. For item 1, the total number of correct responses was three, for item 2 one, and for item 3 four.

Results indicate that the CCF group students were highly or even fully aware (median = 3, mean = 2.5) of the kinds of written feedback given by the English I teacher on their practice and graded writings, followed by the ICF (median = 1.50, mean = 1.83) and the DCF groups (median = 1, mean = 1.69).

With regard to question 2, the CCF and the ICF groups showed that they were half/partially aware (median = 0.50, mean = 0.49 for CCF and 0.48 for ICF) of the approach their teacher used in treating their grammar errors in their writings. On the other hand, the DCF group were not aware or had very little awareness (median = 0, mean = 0.02) of what their teacher did to their grammar errors in their practice and graded compositions.

As to the focus of written corrective feedback, the CCF group had high awareness (median = 3, mean = 3.15) about the grammar areas targeted by the teacher in giving the

corrective feedback. The other two experimental groups were half/partially aware of the target grammar areas (ICF median = 2, mean = 1.83; DCF median = 2, mean = 1.77). In all items, the CCF group scored the highest followed by the ICF and DCF groups respectively.

Results indicate that students paid attention to and were aware of the written comments and grammatical corrective feedback on their compositions. These findings corroborate Ferris' (1995) findings but contrast that of Cohen and Calvanti's (1990), Leki's (1990), and Chaudron's (1995) which claimed that many students did not pay attention to the corrective feedback they had received.

Students' paying attention to and becoming aware of the written comments and corrective feedback relates to the actions they took when they got their compositions (discussed below). These responses in terms of attention/awareness and actions could be direct results of the rewriting task. Upon getting their practice writings, students were asked to revise their work by using the suggestions/corrections given by the teacher. In rewriting their work, they needed to read, pay attention to, become aware of, and understand the feedback so that they could improve their compositions both in terms of ideas and language. As noted by Hedgecock and Lefkowitz (1994) and Ferris (1995), revision or rewriting activities make students pay more attention to feedback.

The attention, as well as the awareness, of students to the corrective feedback can also be linked to students' positive attitudes towards WCF, as found in this study. Gass and Selinker (1994) and Schmidt (1990) noted that attitudes relate to the amount of attention to input. If students have positive attitudes towards a certain teaching approach or towards a particular topic, they are more likely to pay attention to it. In this study, students had positive attitudes towards the WCF they had received.

The nature of English course in which this study was conducted could have also influenced the attention paid by students to WCF. The course uses an integrated approach, in which grammar is integrated in learning activities, such as in reading, writing and rewriting. Grammar is also one aspect considered in the assessment, i.e. quizzes and exams, although to a minimal extent. Hedgecock and Lefkowitz (1990) contend that students' response patterns indicate the practices they observe in their learning environment. The integration of grammar, even not to a great extent, in the course may develop students' concern for accuracy. Schmidt (1990) claimed that as an affective factor this concern for accuracy can make students pay attention to linguistic forms. Thus, if students have high regard or concern for accuracy, they are more likely to pay attention to the corrective feedback, which focuses on certain forms and which they believe can help them improve their accuracy (as discussed in the attitude part).

Comparisons of scores on individual items on attention to/awareness of WCF

Table 1 Kruskal-Wallis test results for attention/awareness

	Item 1	Item 2	Item 3
Chi-Square	8.316	19.775	15.808
df	2	2	2
Asymp. Sig.	.016	.000	.000

Kruskall-Wallis Test showed that there were significant differences in the median scores in the three individual attention items between the three groups, item 1 $\chi_2(2, N = 51) = 8.32$, $p < 0.05$, item 2 $\chi_2(2, N = 51) = 19.78$, $p < 0.001$, and item 3 $\chi_2(2, N = 51) = 15.81$, $p < 0.001$.

Follow up Mann-Whitney U tests showed the following:
-   item 1: The CCF group scored significantly higher than the DCF group (U = 64.00, Z = - 2.613, p < 0.05) and ICF group (U = 108.00, Z = - 2.274, p < 0.05).
-   Item 2: The DCF group had significantly lower ratings than the ICF group (U = 36.00, Z = - 3.57, p < 0.05) and the CCF group (U = 16.00, Z = - 4.469, p < 0.05).
-   Item 3: The CCF group scored significantly higher than both DCF group (U = 38.50, U = - 3.482, p < 0.01) and ICF group (U = 72.00, Z = - 3.265, p < 0.01).

Results indicate that students who received coded corrective feedback were more aware of the kind of written feedback they received than those who received direct or indirect corrective feedback. Moreover, they were more aware than the other two groups about the types of grammar errors the teacher corrected. In terms of how the teacher corrected their grammar errors, students who received indirect and coded corrective feedback were more aware than those who obtained direct corrective feedback.

Comparisons of attention to/awareness of WCF

The scores in all three attention items for each student were added to obtain the over-all attention/awareness level of each group. The scores ranged from 0 (no attention at all or unaware) to 8 (full attention or fully aware).

Results show that in average the CCF group scored the highest (mean = 6.13, SD = 0.98) followed by the ICF group (mean = 4.14, SD = 2.02), while the DCF group scored the lowest among the three (mean = 3.48, SD = 1.19).

Table 2 ANOVA results for average attention/awareness scores

	df	F	Sig.
Between Groups	2	14.633	.000
Within Groups	48		

ANOVA revealed that the differences in the attention scores between the three experimental groups were significant (F (2, 48) = 14.633, p < 0.001, confirmed by Robust Test of Equality of means, Welch statistic = 24.527, p < 0.001).

Post hoc multiple comparisons using Games-Howell revealed that the significant differences were between CCF and DCF (MD = 2.65, p < 0.001) and between CCF and ICF (MD = 1.99, p < 0.01). Results mean that students who received CCF had higher attention level to, or more aware of, the written corrective feedback they obtained than those who received either DCF or ICF.

Differences in attention to/awareness of WCF

Students who received CCF were significantly more aware of the kind(s) of written corrective feedback given by the teacher on their writings and of the types of written grammar errors corrected by the teacher. Moreover, in average, students who received CCF had significantly higher attention level or were significantly more aware of the WCF they had received compared to those who received DCF and ICF.

These results support Sheen's (2010) conclusion that written direct correction promotes noticing but written metalinguistic corrective feedback promotes noticing and understanding.

The underlining of errors with correction codes given to the CCF students could have made them notice, i.e. paid attention to and became aware of, the target forms. The explicit corrections given to the DCF group and the simple underlining of errors given to the ICF groups could have promoted noticing as well. However, the metalinguistic information in the correction codes and in the correction guide could have not only made the CCF students notice the target forms but also made them understand these forms. The absence of such metalinguistic guidance among DCF and ICF students could have resulted in low level of awareness.

Furthermore, the ICF and CCF groups were significantly more aware of the manner/approach used by the teacher to correct their written grammar errors.

The ICF and CCF groups could have clearly distinguished the kind of written corrective feedback directed at their grammar from the written comments directed at their ideas. The underlining in the ICF and the underlining with codes in the CCF of grammatical inaccuracies as grammatical corrective feedback are distinct from the written comments on ideas, which were given in forms of words, phrases, suggestions, or questions. On the other hand, the DCF students could have not made such distinction since the written grammatical corrective feedback involved drawing a line through the errors and writing the letters or words to correct them. Moreover, as noted earlier, ICF and CCF could have led to more cognitive engagement due to their problem-solving nature, whereas direct correction could have simply involved copying the teacher's corrections with little cognitive engagement. More cognitive involvement could mean higher retention and, thus, higher recall of the teacher's grammar error correction approach.

Actions towards WCF

Table 3 shows responses of the three experimental groups, in terms of median and mode, as to how often they performed seven listed actions in response to the written corrective feedback they received on their writings.

Table 3 Descriptive statistics for actions

Actions	DCF		ICF		CCF	
	Median	Mode	Median	Mode	Median	Mode
1. I read my teacher's comments/corrections on my grammar.	4	5	5	5	5	5
2. I study my grammar mistakes.	4	3, 4	4	4, 5	4	3, 5
3. I correct my grammar mistakes.	4	4	5	5	4	5
4. I rewrite my work following my teacher's grammar corrections/comments and give my rewriting back to him.	4	4	4	4, 5	5	5
5. I try to remember my grammar mistakes.	4	3	4	4	4	4
6. I ask my teacher about the grammar comments/corrections.	3	3	3	3	3	3
7. I ask my friends about the grammar comments/corrections.	3	4	4	4	4	4

Scale: 1= never, 2 = rarely, 3 = sometimes, 4 = usually, 5 = always

The three groups seem to share almost similar responses to the seven actions. All WCF groups always read their teacher's grammar corrections/comments, while they usually studied their grammar mistakes. The DCF and CCF groups usually corrected their grammar mistakes, while the ICF group always did this action. With item 4, the DCF and ICF groups

usually rewrote their work following the teacher's corrections and gave the rewriting back to him, but the CCF group did this action always. All three groups usually tried to remember their grammar mistakes and sometimes asked their teacher about the grammar corrective feedback. As to asking their friends about the corrective feedback, the ICF and CCF groups usually did this, while the DCF group sometimes to usually did this particular action.

In addition, actions to written corrective feedback can be arranged from the most frequent to the less frequent as follows:

1. reading the teacher's comments/corrections on their grammar
2. correcting their grammar mistakes, and rewriting their work following the teacher's grammar corrections/comments then giving back the rewriting to the teacher
3. studying their grammar mistakes, and trying to remember those grammar mistakes
4. asking their friends about the grammar comments/corrections
5. asking the teacher about the grammar comments/corrections

Comparisons of action responses to WCF

Table 4 Kruskal-Wallis test results for actions

	Action 1	Action 2	Action 3	Action 4	Action 5	Action 6	Action 7
Chi-Square	1.787	1.192	2.546	2.005	5.178	.418	1.284
df	2	2	2	2	2	2	2
Asymp. Sig.	.409	.551	.280	.367	.075	.811	.526

Kruskal-Wallis tests indicated that the responses of students in all three experimental groups regarding how often they read their teacher's grammar corrections, studied, corrected and remembered their grammar mistakes, rewrote their work following the teacher's corrections, and asking their teacher or friends about the grammar corrections did not differ significantly ($p > 0.05$).

This finding corroborates Hyland's (2003) findings in which students reportedly tried to incorporate most of their teacher's comments, and that most students used written corrective feedback in the immediate revision of their compositions.

The common actions students took in response to the WCF they had received were similar, despite receiving different types of corrective feedback, most probably due to the fact that they were expected to do the same thing upon getting back their writings – to revise and resubmit their work. In order to do that, they should read and understand the comments/corrections before they could rewrite their work. In rewriting their work, they needed to correct their mistakes, and in the process, they tried to remember and study such mistakes. If they could not understand the comments/corrections, they usually asked their classmates and sometimes their teacher for help.

These actions confirm the findings regarding attention/awareness, i.e. that students who received written corrective feedback paid attention and were aware of the feedback. Reading the corrective feedback requires attention. Rewriting and correcting mistakes are not possible without paying attention to the comments/corrections and without understanding what needed to be corrected. Studying and remembering mistakes involves attention and leads to awareness. Asking knowledgeable others, such as friends or teachers, helps in raising awareness and understanding. However, it should be noted that there were significant differences in the level of attention/awareness between the different groups, whereas there were no differences in the frequency of actions they took in response to the type of written corrective feedback they had received. This indicates that students took similar actions in response to any kind of corrective feedback, most probably because of the common

consequential task of revising, but the different types of WCF could have required different cognitive processes that influenced the levels of awareness.

Attitudes towards WCF

The table below shows the means, medians and modes of the perceptions of the three different groups on 19 statements about the written corrective feedback they received.

Table 5 Descriptive statistics for attitudes

The way my English I teacher corrects or comments on my grammar errors in my practice and graded writings	DCF		ICF		CCF	
	Median	Mode	Median	Mode	Median	Mode
1) is useful.	4	4,5	4	4	5	5
2) helps me learn English.	5	5	4.5	5	5	5
3) makes me bored.	3	3	3	3	2	2
4) improves my English skills.	4	5	4	4	5	5
5) improves the quality of my writing.	4	4	4	4	5	5
6) makes me lose confidence in my English writing skills.	3	3	2	2	2	2
7) makes me want to practice writing more often.	4	4	4	4	4	4
8) makes me think about what I write.	4	4	4	4	5	5
9) makes me think about how I write.	4	4	4	4	4.5	4,5
10)makes me feel stupid.	3	3	2	2	2	2
11)improves my thinking skills.	4	4	4	4	4.5	5
12)makes me careful when I write.	4	4	4	4	4.5	5
13)does not help me at all.	2	2	1	1	2	2
14)is the best way to correct students' grammar in writing.	4	4	4	4	4	5
15)makes me want to write better.	4	4,5	4	4	5	5
16)does not let me try other ways of writing my ideas.	4	4	2	2	2	2
17)improves my grammar.	4	4,5	4	4	5	5
18)should be followed by other English teachers too.	4	4	4	4	4	4
19)should be changed with other ways.	3	3	3	3	3	3

Scale: 1 – strongly disagree; 2 – disagree; 3 – undecided; 4 – agree; 5 – strongly agree

Results indicate that the three groups similarly agreed that the WCF they received made them want to practice writing more often (item 7) and should be followed by other English teachers too (item 18). All three groups strongly agreed that the WCF they received helped them learn English (item 2). However, they were equally undecided on changing the WCF approach with other methods (item 19). Both DCF and ICF groups equally agreed that the WCF they received was useful (item 1), improved the quality of their writing (item 5), made them think about what they wrote (item 8), made them want to write better (item 15), and improved their grammar (item 17), whereas the CCF group strongly agreed to such statements. Moreover, all three groups agreed that the WCF they received made them think how they wrote (item 9), improved their thinking skills (item 11), made them careful when they wrote (item 12), and was the best way to correct students' grammar in writing, although many students in the CCF group reported strong agreement to such items. The CCF group also strongly agreed that the WCF they received improved their English skills (item 4), while the DCF and ICF similarly agreed to the statement, although many students in the DCF group reported strong agreement. Both the ICF and CCF groups disagreed that the WCF they received made them lose confidence in their English writing skills (item 6) and made them

feel stupid (item 10), but the DCF group was undecided on both items. The ICF and DCF groups were similarly undecided about item 3 (the WCF they received made them bored), while the CCF group disagreed with the statement. The DCF and CCF groups disagreed that the WCF they received did not help them at all (item 13), while the ICF group reported strong disagreement to such statement. Finally, while both the ICF and CCF groups disagreed that the WCF they obtained did not let them try other ways of writing their ideas (item 16), the DCF group agreed to it.

All three groups had positive attitudes towards the WCF they had received. This finding is in line with the findings of Lalande (1982), Cohen and Calvanti (1990), Ferris (1995), Hedgecock and Lefkowitz (1996), Kubota (2001), Schulz (2001), Hyland (2003), and Rahimi (2009) about students' positive view of teachers' WCF.

The positive attitudes towards WCF are most probably due to the belief that it is useful. Hyland (2003) found out the same students' belief in her case studies – students believed that WCF helped them notice their errors and that continuous corrective feedback would eventually result in their improvement.

Schulz (2001) stated that the way foreign languages are taught and tested is a possible reason for the positive student attitudes towards WCF. As noted by Cohen and Calvanti (1990) and Hedgecock and Lefkowitz (1996), students' attitudinal responses reflect the principles and practices that they observe in class. The English course in which the study was done involved some grammar lessons, although not taught in isolation. These lessons are integrated in the reading and writing, and to some extent in the listening/speaking, activities. The course aims for the improvement of students' language proficiency, and grammatical accuracy is considered an integral part of that proficiency. The course assessments, i.e. quizzes and exams, therefore include grammatical accuracy as a criterion, although it is not the main focus and is given minimal weight. This integration of grammar in the learning tasks and assessments leads to the development of concern for accuracy among the students (also discussed above in attention/awareness section).

The concern for grammatical accuracy can be related to the students' goals, and thus their motivation, in learning English as a second language. Getting a good grade could be the main objective in improving their English skills, particularly in terms of writing and grammar. They might have hoped that they could improve their writing and grammar skills so that they could get good scores in quizzes and exams. Or, they might have hoped that improving their English writing skills could help them in the future, especially in their career, and in other English-related tasks such as oral presentations. These goals could have strengthened the students' concern for accuracy, or their concern for accuracy could have reinforced their L2 learning goals.

Students in this study probably believed that, since WCF focused on certain grammatical structures, the practice of giving such feedback was helping them deal with their concern for grammatical accuracy.

Another reason why students view WCF in a positive way is the experiences of the students about the positive effects of corrective feedback and grammatical awareness (Schulz, 2001). Students in this study could have felt that their language skills, especially in writing and grammar, had improved. Students probably kept track of their performance in every practice writing, and they could have noticed some degree of improvement. It is possible that they could have attributed their improvement partly to the WCF they had received.

Comparisons of group responses to individual attitude items

Table 6 Kruskal-Wallis test results for attitudes

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Chi-Square	5.30	3.71	5.72	5.83	7.82	4.54	1.51	6.38	3.83	2.995	6.08	4.30	6.51	3.02	4.00	14.61	10.41	6.76	3.73
df	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Asymp. Sig.	.071	.157	.057	.054	.020	.103	.470	.041	.147	.224	.048	.116	.039	.221	.135	.001	.005	.034	.155

Results of the Kruskall-Wallis tests revealed that there were no significant differences between the three WCF groups' responses to items 1, 2, 3, 4, 6, 7, 9, 10, 12, 14, 15, and 19. However, significant differences between the three groups were noted in item 5 (χ_2 (2, $N = 51$) = 7.82, $p< 0.05$), item 8 (χ_2 (2, $N = 51$) = 6.38, $p < 0.05$), item 11 (χ_2 (2, $N = 51$) = 6.08, $p < 0.05$), item 13 (χ_2 (2, $N = 51$) = 6.51, $p< 0.05$), item 16 (χ_2 (2, $N = 51$) = 14.61, $p <0.01$), item 17 (χ_2 (2, $N = 51$) = 10.41, $p < 0.01$), and item 18 (χ_2 (2, $N = 51$) = 6.76, $p< 0.05$).

Mann-Whitney U Tests showed that in:
- item 5, the CCF group was significantly more agreeable to the statement than the ICF group.
- item 8, the CCF group had significantly higher agreement rating (strongly agree) than the DCF and ICF groups (agree).
- item 11, the CCF group had significantly higher agreement to the statement than the ICF group.
- item 13, the ICF group had significantly lower rating than the DCF and CCF groups. The ICF group strongly disagreed while the other two groups disagreed to the item.
- item 16, the DCF group had significantly higher rating than the ICF and CCF groups. The DCF group agreed while the ICF and CCF groups disagreed.
- item 17, the CCF group had significantly higher agreement to the statement than the ICF group.
- item 18, the CCF was significantly more agreeable to the item than the DCF and ICF groups.

Comparisons of groups' average attitudes towards WCF

To get an over-all picture of the attitudes of each group towards written corrective feedback they received, the responses of every student to every item on the Likert scale were summed up and an average was obtained for every group. The average attitude scores ranged from 1 (highly negative) to 5 (highly positive). (Note: To make the directions of all items similar, responses to all negative items, i.e. items 3, 6, 10, 13, 16, and 19, were reversed before the averages were computed.)

Results show that all three groups had positive attitudes towards WCF, with the CCF group having the highest rating (mean = 4.31, 0.45), followed by the ICF (mean =3.95, SD = 0.37) and the D (mean =3.79, SD = 0.52) CF groups respectively.

Table 7 ANOVA results for average attitude scores

	df	F	Sig.
Between Groups	2	6.16	.004
Within Groups	48		

ANOVA revealed that there was a significant difference in the attitudes of the three groups towards WCF (F (2, 48) = 6.16, $p < 0.01$). Post hoc test using Hochberg showed that

the significant differences lay between the CCF and the DCF (MD = 0.52, p < 0.01) and the ICF groups (MD = 0.36, p < 0.05). The CCF group had more positive attitudes towards the WCF they had received than the DCF and ICF groups.

Differences in attitudes

Students who received CCF were significantly more positive that the kind of written corrective feedback they had received:
- improved the quality of their writing, their thinking skills, and their grammar when compared to those who received ICF
- made them think about what they wrote and should be followed by other English teachers when compared to those who received DCF and ICF.

For DCF students, they could have believed that the WCF they received made them know their mistakes and it helped them focus more easily on those mistakes. DCF could have provided them a clear way on how to correct their mistakes and did not leave them guessing how they should correct their grammar errors. In other words, with direct corrections less thinking is required. On the other hand, ICF could have allowed students to see their mistakes, especially the ones they failed to notice on their own. ICF is thought to engage students in problem solving which requires more thinking than DCF. ICF students could have been engaged in problem solving and thinking, but their thinking would have been more of random guessing especially with difficult errors, and when they could not solve the problems they could have resorted to asking their classmates or teacher. For the CCF students, they could have felt that the coded approach not only let them know what their mistakes were but also made them think more carefully about why they were wrong. The approach could have made them analyze their grammar mistakes. Similar to ICF, CCF engages students in problem solving and, thus, in a lot of thinking. With the metalinguistic knowledge they obtained from the codes and the correction guide, CCF students could have been involved in educated, not only random, guessing. Analyzing the nature of their inaccuracies and understanding and learning them in the process could have engaged them in more thinking compared to students who received DCF and ICF.

Students who received DCF had significantly more positive belief that the kind of written corrective feedback they had received did not let them try other ways of writing their ideas when compared to those who received ICF and CCF. Understandably, when exact words were given to correct inaccurate constructions, students most probably simply copied the corrections; and this could have limited their opportunity and their ability to try other ways of correcting their work. Those who received ICF and CCF on the other hand had to figure out the nature of their errors and try different ways to correct them.

In average, although all groups' ratings fall within the positive attitude range, the CCF group had significantly more positive attitudes to the kind of WCF given to them than those who received DCF and ICF. Moreover, the CCF group had significantly more positive belief that the kind of WCF they received should be followed by other English teachers compared to the DCF and ICF groups.

This finding is in contrast with Shin's (2008) findings that students preferred the direct correction approach because it was easier for them to implement, i.e. to copy the corrections, than the indirect and coded approaches. Shin believed that it was the case because students were not equipped with linguistic resources that would allow them to come up with words or structures needed to correct their work.

In this study, the CCF students' more positive attitudes could be related to the kind of learning they were in engaged in and to their sense of improvement in a learning environment that involved CCF.

As noted above, students who received CCF were significantly more positive that CCF:

- made them think about what they wrote than the DCF and ICF students, as they had to think more carefully, or analyze, their mistakes; and,
- let them try other ways of writing their ideas than DCF students

CCF students could have thought that CCF was a good method to help them learn. They could have perceived CCF as engaging as well as challenging because of its problem solving nature. Although it is similar to indirect approach in terms of problem solving, CCF might not be as difficult because of its guided learning nature. Furthermore, CCF allowed them to test their own hypotheses about certain structures and did not bar them from exploring different alternatives to correct their errors. It is possible that students prefer learning activities that are stimulating (mentally engaging and challenging), create autonomy (allow freedom to discover solutions), and are scaffolded (offer appropriate support).

Their more positive attitudes could also be related to their sense of accomplishment in their on-going appraisal of their writing performance. As they kept track of their performance in every practice writing, students in the coded CF group could have noticed that they were improving. Seeing fewer corrections could have made the students feel that they were improving, and thus giving them a sense of accomplishment. This is corroborated by the perception of the CCF students that the CCF improved the quality of their writing, their thinking skills, and their grammar, especially when compared to those who received ICF (as discussed above). Dornyei (2001) believed that L2 learner's perception of their competence in the target language influences their self-confidence and their motivation.

Conclusions

Findings indicate that students respond to written corrective feedback by paying attention to and becoming aware of the corrective feedback they receive. They also usually act on the feedback in similar ways and they have positive attitudes towards the corrective feedback they receive.

However, different types of written corrective feedback entail significant differences in levels of attention to/awareness of and attitudes towards the feedback. Findings reveal that coded corrective feedback makes learners more aware of the feedback and the target linguistic forms compared to direct and indirect corrective feedback. Moreover, this study shows that learners who receive coded corrective feedback have significantly more positive attitudes than those who receive direct and indirect corrective feedback.

Pedagogical implications

Pedagogically, the findings of this study imply that:
- Focused coded corrective feedback may be a better approach compared to the direct, indirect and no corrective feedback approaches as it relates to more positive cognitive and affective student responses in a real academic classroom setting.

- As such, the judicious and well-organized consistent use of coded corrective feedback with a correction guide can be adapted in second language courses, especially in foundation English courses in a Thai university setting where grammatical accuracy is integrated.
- Rewriting can be a useful activity in writing instructions where corrective feedback is involved. It can help learners focus their attention to and become aware of target forms.

Recommendations for further research

This study reveals that coded corrective feedback entails more positive cognitive and attitudinal responses, but more studies are needed to better understand the role of such feedback on L2 learning/acquisition. Thus, further investigations should focus on the effectiveness of different types of written corrective feedback, especially the coded approach, on L2 learning/acquisition, both quantitatively and qualitatively. Such investigations should not disregard student responses to such feedback. Moreover, future research should consider larger sample/population sizes to offer insights about the role of written corrective feedback in a bigger context. In addition, corrective feedback studies should involve other English courses or other target languages with different learner proficiency levels, different writing tasks and different linguistic structures. Finally, all such studies should examine the long-term efficacy of written corrective feedback in real language classroom settings so that they will be not only theoretically significant but also pedagogically relevant.

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